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AMIN & TUROCY, LLP
24TH FLOOR, NATIONAL CITY CENTER
1900 EAST NINTH STREET
CLEVELAND, OH 44114

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| EXAMINER |
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WOOD, WILLIAM H

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| ART UNIT | PAPER NUMBER |
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2124

DATE MAILED: 03/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/820,519

Applicant(s)

HORVITZ, ERIC J.

Examiner

William H. Wood

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Claims 1-45 are pending and have been examined.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-21, 40 and 44-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yinger** et al. (USPN 5,960,204) in view of **Cherkasova** et al. (USPN 6,425,057).

Claim 1

Yinger disclosed a method for downloading resources, each having a size, from a source to an intermediate storage facility, having a finite storage capacity (*column 1, line 48 to column 2, line 34*), the method comprising:

- a) accepting at least one user-based factor (*column 1, lines 59-67*);
- c) proactively maximizing an expected value of downloaded resources via utilization of the user-based (*column 2, lines 10-24; column 1, lines 24-28; maximized value equals minimized waste; the system performs for potential future updates as well*).

Yinger did not explicitly state *accepting at least one resource-based factor*.

Cherkasova demonstrated that it was known at the time of invention to make use of systems which accept resource-based factors (column 3, lines 20-22). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the software distribution system of **Yinger** with a central caching system from which to draw components (objects, modules, resources) similar to that described in **Cherkasova's** teaching to increase expected download value. This implementation would have been obvious because one of ordinary skill in the art would be motivated to efficiently distribute software to those who needed it (**Yinger**: column 1, lines 5-11 and lines 24-38) and without unnecessary work duplication (**Cherkasova**: column 1, line 39 to column 2, line 8; **Yinger**: column 1, lines 24-38 and column 6, lines 14-18; caching objects for similar users and thus repeated requests).

Claim 2

Yinger and **Cherkasova** disclosed the method of claim 1 wherein the at least one user-based factor includes probabilities that a user belongs to various user type classes (**Yinger**: column 1, lines 24-28; *user class of needing an application or not*).

Claim 3

Yinger and **Cherkasova** did not explicitly state the method of claim 2 further comprising *determining* the probabilities that a user belongs to various user type classes. **Yinger** demonstrated that it was known at the time of invention that users belong to a variety of

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types and/or classes, in so much as certain users use certain applications or programs and not other applications (column 1, lines 24-28; column 6, lines 14-18) and thus there being a probability of certain users of a given system belonging to various classes/types. Furthermore, **Cherkasova** disclosed the use of caches to reduce delays when users require similar objects (column 1, lines 53-59). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the software distribution system of **Yinger** with efficient cache mechanism for determining probability of user type as suggested by **Yinger** and **Cherkasova's** own teachings. This implementation would have been obvious because one of ordinary skill in the art would be motivated to reduce the cache pollution and decrease latency (**Cherkasova**: column 1, line 38 to column 4, line 44) by correctly evicting unnecessary objects (column 2, lines 1-8) determined by a likely group or class of users on a system (**Yinger**: column 1, lines 24-28).

Claim 4

Yinger and **Cherkasova** did not explicitly state the method of claim 3 wherein the probabilities that user belongs to various user type classes are determined based on evidence using a Bayesian network. Official Notice is that it was known at the time of invention to utilize Bayesian networks for probability. It would have been obvious to one of ordinary skill in the art at the time of invention to implement the probability system of **Yinger** and **Cherkasova** with Bayesian probability. This implementation would have

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been obvious because one of ordinary skill in the art would be motivated to use all available technologies in accurately determining probability.

Claim 5

Yinger did not explicitly state the method of claim 2 wherein the at least one resource-based factor includes probabilities that users of the various user type classes will use the resource at least once. **Cherkasova** demonstrated that it was known at the time of invention to make use of systems which accept resource-based factors of probabilities for needing objects/resources (column 3, lines 20-22). **Yinger** disclosed probabilities of differing user types (column 1, lines 24-28). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the software distribution system of **Yinger** with a central caching system from which to draw components (objects, modules, resources) basing decisions on user type probability similar to that described in **Cherkasova's** teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to efficiently distribute software to those who needed it (**Yinger**: column 1, lines 5-11 and lines 24-38) and without unnecessary work duplication (**Cherkasova**: column 1, line 39 to column 2, line 8; **Yinger**: column 1, lines 24-38 and column 6, lines 14-18; caching objects for similar users and thus repeated requests).

Claim 6

Yinger and **Cherkasova** disclosed the method of claim 1 wherein the at least one resource-based factor includes probabilities that users of the various user type classes will use the resource at least once (*see claim 5*).

Claim 7

Yinger and **Cherkasova** disclosed the method of claim 2 wherein the at least one resource-based factor is a probability that the resource will be used at least once and is based on a sum, over all user type classes, of a product of (a) a probability that the resource is used at least once, given that an application to which the resource belongs is used at least once, by a user of the user type class (*see claim 8*), [(b)] a probability that the application to which the resource belongs is used at least once by a user of the user type class (*see claim 5*), and (c) a probability that the user belongs to the user type class (*see claim 2*).

Claim 8

Yinger did not explicitly state the method of claim 1 wherein the at least one resource-based factor includes an association of each of the resources to at least one application class. **Cherkasova** demonstrated that it was known at the time of invention to calculate probabilities of objects being used in order to remain in a cache (column 3, lines 13-24). **Yinger** disclosed not all users use the same applications (column 1, lines 24-28). It would have been obvious to one of ordinary skill in the art at the time of invention to

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implement the software distribution system of **Yinger** with a central caching structure storing software objects based upon their need as found in **Cherkasova's** teaching (as suggested by **Yinger** the more likely need certain applications based upon user type). This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide an efficient mechanism (cache) to keep likely needed resources/objects near by and thus speeding up operations such as download and reducing wasted space of unneeded objects (column 1, lines 24-28).

Claim 9

Yinger and **Cherkasova** did not explicitly state the method of claim 8 wherein the at least one resource-based factor includes an indication, for each of the resources, of whether the resource is a core component or an optional component of the application class with which it is associated. **Yinger** demonstrated that it was known at the time of invention to modularize or make into components software packages (column 4, lines 17-48). Official Notice is taken that components and modules are often either required or optional to a given system. It would have been obvious to one of ordinary skill in the art at the time of invention to implement **Yinger** and **Cherkasova** with required and optional components and an indication thereof. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide a system of downloading on an "as needed basis" with information determining if objects should be stored/downloaded (optional or not). See **Cherkasova** column 3, line 15 and **Yinger**: column 1, line 10.

Claim 10

Yinger and Cherkasova disclosed the method of claim 1 wherein the act of maximizing an expected value of downloaded resources includes maximizing an expected value density of downloaded resources (***Yinger**: column 1, lines 24-28; column 2, lines 10-24*).

Claim 11

Yinger and Cherkasova disclosed the method of claim 1 wherein the act of maximizing an expected value of downloaded resources includes minimizing an expected cost of not having a needed resource (***Cherkasova**: column 3, lines 13-23; minimizing the cost of not having appropriate data in appropriate location*).

Claim 12

Yinger and Cherkasova disclosed the method of claim 11 wherein the expected cost of not having a needed resource is based on one of enhancement rates of the resources and value densities of the resources (***Cherkasova**: column 3, lines 13-23; and **Yinger**: column 1, lines 24-28; column 2, lines 10-24*).

Claim 13

Yinger and Cherkasova disclosed the method of claim 12 wherein the enhancement rate of a resource is based on the size of the resource, a probability of that resource

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being used at least once, and a cost of later downloading the resource (***Cherkasova***: column 3, lines 13-23).

Claim 14

Yinger and **Cherkasova** disclosed the method of claim 12 wherein the value density of a resource is based on the size of the resource and the probability that the resource will be used at least once (***Cherkasova***: column 3, lines 13-23).

Claim 44

Yinger and **Cherkasova** disclosed the method of claim 1 wherein the at least one user-based factor is a function of a time offline until the intermediate storage facility is reconnected with the source. Official Notice is taken that it was known at the time of invention to for systems going offline to increase latency. It would have been obvious to one of ordinary skill in the art at the time of invention to implement the latency of **Cherkasova** with offline considerations. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide the most accurate consideration of all facts concerning utility (cost and latency and whether needed) value.

Claim 45

Yinger and **Cherkasova** disclosed the method of claim 44 wherein the time offline is a probability distribution considering at least one of (i) resource context, (ii) a user type class, and (iii) a recent usage pattern (see claim 7).

Claims 15-21

The limitations of claims 15-21 correspond to method claims 1-14 and as such are rejected in the same manner.

Claim 40

Yinger disclosed a storage medium having machine executable instructions which, when executed by a machine, effect the acts of:

- a) accepting at least one user-based factor (*column 1, lines 59-67*);

Yinger did not explicitly state *accepting at least one resource-based factor; accepting at least one storage facility-based factor; and minimizing total expected latencies to request and receive resources*. **Cherkasova** demonstrated that it was known at the time of invention to make use of systems which accept resource-based factors (column 3, lines 20-22), accept storage-based factors (column 3, lines 18-20), and minimize latency to resource distribution (column 3, lines 13-18). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the software distribution system of **Yinger** with a caching system similar to that described in **Cherkasova's** teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to efficiently distribute software to those who needed it (**Yinger**: column 1, lines 5-11 and lines 24-38) and without unnecessary work duplication (**Cherkasova**: column 1, line 39 to column 2, line 8; **Yinger**: column 1,

lines 24-38 and column 6, lines 14-18; caching objects for similar users and thus repeated requests).

3. Claims 22-39 and 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yinger** et al. (USPN 5,960,204) in view of **Cherkasova** et al. (USPN 6,425,057) and in further view of **Fischer** et al. (USPN 6,438,672).

Claim 22

Yinger disclosed a method for distributing resources, each having a size, among at least two storage facilities, each of the storage facilities having a finite capacity (*column 1, lines 48 to column 2, lines 34*), the method:

a) accepting at least one user-based factor (*column 1, lines 59-67*);

Yinger did not explicitly state *accepting at least one resource-based factor; accepting at least one storage facility-based factor; and minimizing total expected latencies to request and receive resources via utilization of the user-based factor, the resource-based factor, and the storage facility-based factor*. **Cherkasova** demonstrated that it was known at the time of invention to make use of systems which accept resource-based factors (column 3, lines 20-22), accept storage-based factors (column 3, lines 18-20), and minimize latency to resource distribution based upon factors (column 3, lines 13-18). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the software distribution system of **Yinger** with a caching system similar to that described in **Cherkasova's** teaching based upon factors. This

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implementation would have been obvious because one of ordinary skill in the art would be motivated to efficiently distribute software to those who needed it (**Yinger**: column 1, lines 5-11 and lines 24-38) and without unnecessary work duplication (**Cherkasova**: column 1, line 39 to column 2, line 8; **Yinger**: column 1, lines 24-38 and column 6, lines 14-18; caching objects for similar users and thus repeated requests).

Yinger and **Cherkasova** did not explicitly state *each storage facility having a request-to-receive latency*. **Fischer** demonstrated that it was known at the time of invention to provide multiple caches (column 1, lines 29-52). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the distribution system of **Yinger** and **Cherkasova** with Two Level Cache as found in **Fischer**'s teaching and thus provide for multiple storage facilities with respective request-to-receive latencies. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide a system of increased efficiency of resource/software/object distribution (column 2, lines 13-17; column 1, lines 45-52; lines 56-58).

Claim 23

Yinger, **Cherkasova** and **Fischer** disclosed the method of claim 22 wherein the at least one user-based factor includes probabilities that a user belongs to various user type classes (**Yinger**: column 1, lines 24-28; *user class of needing an application or not*).

Claim 24

Yinger, Cherkasova and Fischer did not explicitly state the method of claim 23 further comprising *determining* the probabilities that a user belongs to various user type classes. **Yinger** demonstrated that it was known at the time of invention that users belong to a variety of types and/or classes, in so much as certain users use certain applications or programs and not other applications (column 1, lines 24-28; column 6, lines 14-18) and thus there being a probability of certain users of a given system belonging to various classes/types. Furthermore, **Cherkasova** disclosed the use of caches to reduce delays when users require similar objects (column 1, lines 53-59). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the software distribution system of **Yinger** with efficient cache mechanism for determining probability of user type as suggested by **Yinger** and **Cherkasova's** own teachings. This implementation would have been obvious because one of ordinary skill in the art would be motivated to reduce the cache pollution and decrease latency (**Cherkasova**: column 1, line 38 to column 4, line 44) by correctly evicting unnecessary objects (column 2, lines 1-8) determined by a likely group or class of users on a system (**Yinger**: column 1, lines 24-28).

Claim 25

Yinger and **Cherkasova** did not explicitly state the method of claim 24 wherein the probabilities that user belongs to various user type classes are determined based on evidence using a Bayesian network. Official Notice is that it was known at the time of

invention to utilize Bayesian networks for probability. It would have been obvious to one of ordinary skill in the art at the time of invention to implement the probability system of **Yinger** and **Cherkasova** with Bayesian probability. This implementation would have been obvious because one of ordinary skill in the art would be motivated to use all available technologies in accurately determining probability.

Claim 26

Yinger did not explicitly state the method of claim 23 wherein the at least one resource-based factor includes frequencies at which users of the various user type classes will use each of the resources. **Cherkasova** demonstrated that it was known at the time of invention to make use of systems which accept resource-based factors (column 3, lines 20-22). **Yinger** disclosed probabilities of differing user types (column 1, lines 24-28). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the software distribution system of **Yinger** with a central caching system from which to draw components (objects, modules, resources) basing decisions on user type probability similar to that described in **Cherkasova's** teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to efficiently distribute software to those who needed it (**Yinger**: column 1, lines 5-11 and lines 24-38) and without unnecessary work duplication (**Cherkasova**: column 1, line 39 to column 2, line 8; **Yinger**: column 1, lines 24-38 and column 6, lines 14-18; caching objects for similar users and thus repeated requests).

Claim 27

Yinger, Cherkasova and Fischer disclosed the method of claim 26 wherein the at least one storage facility-based factor includes an available capacity of each of the two storage facilities (***Yinger:** column 2, lines 10-13; **Cherkasova:** column 3, lines 25-27*) and a relative request-to-receive latency of each of the two storage facilities (***Cherkasova:** column 3, lines 18-20; **Fischer:** column 1, lines 45-47 and column 2, lines 13-17*).

Claim 28

Yinger, Cherkasova and Fischer disclosed the method of claim 27 wherein the total expected latencies is a function of the frequencies at which users of the various user type classes will use each of the resources, and a difference between the relative request-to-receive latencies of the two storage facilities (***Cherkasova:** column 3, lines 13-22; **Fischer:** column 1, lines 56-57*).

Claim 29

Yinger, Cherkasova and Fischer disclosed the method of claim 22 wherein the at least one storage facility-based factor includes an available capacity of each of the two storage facilities and a relative request-to-receive latency of each of the two storage facilities (see claim 27).

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Claim 30

Yinger and **Cherkasova** disclosed the method of claim 22 wherein the total expected latencies to request and receive resources is minimized based on value densities of the resources (**Cherkasova**: column 3, lines 13-22).

Claim 31

Yinger, **Cherkasova** and **Fischer** disclosed the method of claim 30 wherein the value densities of the resources are based on the frequency of use [of] the resources and a difference in [request-to-receive] latencies between the at least two storage facilities (**Yinger**: column 3, lines 13-22; **Fischer**: column 1, lines 40-52).

Claims 32-38

The limitations of claims 32-38 correspond to the limitations of claims 1 and 22-31 and as such are rejected in a similar manner in view of rejections of limitations found in claim 1.

Claim 39

The limitations of apparatus claim 39 correspond to the limitations of method claim 22 and as such are rejected in the same manner.

Claims 41-43

The limitations of method claims 41-43 correspond to the limitations of method claims 22-31 and as such are rejected in a similar manner.

Response to Arguments

4. Applicant's arguments filed 04 October 2004 have been fully considered but they are not persuasive. Applicant argued: 1) **Yinger** is contrary to a proactive maximization action; 2) **Cherkasova** does not pertain to minimizing latencies via various factors/variables; 3) **Yinger** fails to provide a "user-based factor".

First, by maximizing for every application download, **Yinger** necessarily maximizes future application downloads. Every time **Yinger** increases efficiency, future increases necessarily incorporate previous iterations.

Second, **Cherkasova** explicitly states, "A ninth identified strategy is a hybrid policy that also targets *reducing the average latency*" (column 3, lines 13-14; emphasis added). It accomplishes this by analyzing variables/factors and performing certain actions.

Third, the cited passage clearly indicates a "user-based factor" in so much as a factor based upon or related in some way to a user. In this instance, the factor at least indicates application to be used by a particular user.

Rejection of claim 32 has been clarified to reflect its relationship to both claims 22 and claim 1. Rejection of claim 40 has been clarified to reflect its true rejection under 35 U.S.C. § 103(a) as being unpatentable over **Yinger et al.** (USPN 5,960,204) in

view of **Cherkasova et al.** (USPN 6,425,057). Having addressed all of Applicant's raised issues, the rejections are maintained as stated above.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Correspondence Information


Any inquiry concerning this communication or earlier communications from the examiner should be directed to William H. Wood whose telephone number is (571)-272-3736. The examiner can normally be reached 9:00am - 5:30pm Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (571)-272-3719. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9306 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.



William H. Wood
February 18, 2005


KAKALI CHAKI
SUPERVISOR **EXAMINER**
TECHNOLOGY CENTER 2100